

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2  
APPLICATION NO. : 10/642248  
DATED : May 29, 2007  
INVENTOR(S) : Paul DeAngelis and Wei Jing

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title page, Item [56]

Page 4 of "References", Column 2, line 37: After line 37, insert

the reference -- "Construction and Characterization of a Potential Live Oral Carrier-Based Vaccine Against Vibrio Cholerae." Favre et al. Infection and Immunity. September 1996. Vol. 64, No. 9 pages 3565-3570, entire document. --.

In the Specification:

Column 2, line 25: Before the word "polysaccharide's" delete "\*".

Column 4, line 14: Delete "syntheses" and replace with -- synthases --.

Column 6, line 40: Delete "PmHS2" and replace with -- pmHS2 --.

Column 6, line 45: Delete "PmHS2" and replace with -- pmHS2 --.

Column 7, line 1: Delete "a short chondroitin polymer,".

Column 7, line 14: Delete "pnHS, and PmHS2" and replace with  
-- pmHS1, and pmHS2 --.

Column 7, line 18: Delete "PmHS2" and replace with -- pmHS2 --.

Column 7, line 63: After the word "growth" delete ":" and replace with -- ; --.

Column 8, line 15: Delete "PmHS2" and replace with -- pmHS2 --.

Column 8, line 20: Delete "PmHS2" and replace with -- pmHS2 --.

Column 8, line 26: Delete "PmHS2" and replace with -- pmHS2 --.

Column 8, line 34: Delete "PmHS2" and replace with -- pmHS2 --.

Column 9, line 27: Delete "PmHS2" and replace with -- pmHS2 --.

Column 9, line 31: Delete "therapeutic" and replace with -- therapeutic --.

Column 12, line 53: Delete "PmHS2" and replace with -- pmHS2 --.

Column 13, line 4: Delete "Gal-NAc" and replace with -- GalNAc --.

Column 13, line 55: Delete "μof" and replace with -- μg of --.

Column 15, line 1: Delete "eithera" and replace with -- either a --.

Column 19, line 4: Delete "PmHS2" and replace with -- pmHS2 --.

Column 19, line 23: Delete "PmHS2" and replace with -- pmHS2 --.

Column 19, line 27: Delete "PmHS2" and replace with -- pmHS2 --.

Column 19, line 41: Delete "PmHS2" and replace with -- pmHS2 --.

Column 20, line 7: Delete "PmHS2" and replace with -- pmHS2 --.

Column 20, line 17: Delete "PmHS2" and replace with -- pmHS2 --.

Column 20, line 44: Delete "PmHS2" and replace with -- pmHS2 --.

Column 20, line 63: Delete "PmHS2" and replace with -- pmHS2 --.

Column 21, line 39: Delete "AX@" and replace with -- "X" --.

Column 22, line 23: Delete "PmHS2" and replace with -- pmHS2 --.

Column 22, line 26: Delete "PmHS2" and replace with -- pmHS2 --.

Column 25, line 66: Delete "solution 1% SDS" and replace with

-- solution/1.0% SDS, followed with --.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 26, line 26: Delete "5'-CGCTAT-3'" and replace with -- 5'-CGCTAT-3' --.  
Column 26, line 28: Delete "base-pair" and replace with -- base pair --.  
Column 27, line 39: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 28, line 36: Delete "PmCS" and replace with -- pmCS --.  
Column 28, line 40: Delete "PmCS" and replace with -- pmCS --.  
Column 30, line 54: Delete "GlcUa" and replace with -- GlcUA --.  
Column 30, line 64: Delete "PmCS" and replace with -- pmCS --.  
Column 30, line 65: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 31, line 67: Delete "4.4." and replace with -- 4.4 --.  
Column 34, line 10: Delete "(5 lane)" and replace with -- (S lane) --.  
Column 34, line 47: Delete "pmHAS<sup>1-703</sup>" and replace with -- pmHAS<sup>1-703</sup> --.  
Column 36, lines 33-34: Delete "pmHAS<sup>1-703</sup>" and replace with -- pmHAS<sup>1-703</sup> --.  
Column 37, lines 65-66: Delete "ethleneg-lycol" and replace with -- ethlene glycol --.  
Column 38, line 22: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 38, lines 40-41: After "(Dig Easy Hyb)" delete "at 37 C. overnight".  
Column 38, line 51: After "In order" delete ",".  
Column 40, line 8: Delete "were mutated".  
Column 40, line 15: Delete "pmHAS<sup>1-703</sup>" and replace with -- pmHAS<sup>1-703</sup> --.  
Column 42, line 31: Delete "ANXN@" and replace with -- "NXN" --.  
Column 42, lines 34-36: Delete "UDP-GalNAc in analogy to pmHAS transferring  
[<sup>3</sup>H]GalNAc to HA oligosaccharides using UDP-GlcNAc" and replace with  
-- UDP-[<sup>3</sup>H]GalNAc in analogy to pmHAS transferring [<sup>3</sup>H]GlcNAc to HA  
oligosaccharides using UDP-[<sup>3</sup>H]GlcNAc --.  
Column 43, line 21: After "coli" insert a -- . --.  
Column 46, line 32: Delete "pCS" and replace with -- pmCS --.  
Column 46, line 49: Delete "swapping@" and replace with -- "swapping" --.  
Column 49, line 5: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 49, line 13: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 49, line 19: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 49, line 35: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 49, line 55: After "GenBank" delete "<sup>15</sup>".  
Column 49, line 56: Delete "pmHS" and replace with -- pmHS1 --.  
Column 50, line 2: After "Tuner" insert a -- , --.  
Column 50, line 28: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 50, line 31: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 50, line 33: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 50, line 37: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 51, line 37: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 51, line 42: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 51, line 58: Delete "PmHS2" and replace with -- pmHS2 --.

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Column 51, line 61: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 52, line 1: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 52, line 55: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 54, line 3: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 54, line 66: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 54, line 67: Delete "r Hybrid r" and replace with -- or Hybrid or --.  
Column 55, line 14: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 55, line 18: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 55, line 29: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 55, line 39: Delete "Haase" and replace with -- HAase --.  
Column 55, line 40: Delete "Hep2 or Hep2" and replace with -- Hep2 or Hep3 --.  
Column 55, line 43: Delete "*E. Coli*" and replace with -- *E. coli* --.  
Column 57, line 21: Delete "D Main" and replace with -- Domain --.  
Column 57, line 30: After words "library clone" delete "contain" and replace with -- containing --.  
Column 57, line 54: Delete "pMCS" and replace with -- pmCS --.  
Column 57, line 55: Delete "Table XXII" and replace with -- (Table XXII) --.  
Column 60, line 10: Delete "3H, 125I" and replace with -- <sup>3</sup>H, <sup>125</sup>I --.  
Column 62, line 65: After the word "In" and before "FIG." delete "the" .  
Column 63, line 53: Delete "(BBDS)" and replace with -- (BDDS) --.  
Column 67, lines 5-6: Delete "Atailored@" and replace with -- "tailored" --.  
Column 67, line 15: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 67, line 18: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 68, line 16: Delete "PmHS2" and replace with -- pmHS2 --.  
Column 70, lines 41-42: Delete "orchimeric" and replace with -- or chimeric --.  
Column 70, line 60: Delete "xenopus" and replace with -- *Xenopus* --.  
Column 72, line 47: Delete "Zap Express" and replace with -- ZAPEXPRESS® --.  
Column 72, line 60: Delete "the-insert" and replace with -- the insert --.  
Column 75, line 60: Delete "pmHAS1-703 or pmCS1-704" and replace with -- pmHAS<sup>1-703</sup> or pmCS<sup>1-704</sup> --.  
Column 76, line 22: Delete "30 cm;" and replace with -- x 30 cm; --.  
Column 76, line 29: Delete "dn/dC" and replace with -- dn/dc --.

In the Claims:

Column 221, line 38: Delete "combinationS" and replace with -- combinations --.  
Column 221, line 53: Delete "glycosamirioglycan" and replace with -- glycosaminoglycan --.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Sequence listing:

Column 81, at the bottom of the page: Delete "<160> NUMBER OF SEQ ID NOS: 71"  
and replace with -- <160> NUMBER OF SEQ ID NOS: 85 --.

Columns 219 - 220: After the Sequence listing and before the claims, insert the following sequence listing for SEQ ID NOS: 72 - 85:

--

<210> 72

<211> 107

<212> PRT

<213> *Pasteurella multocida*

<400> 72

Ser Ile Ile Val Thr Thr Phe Asn Arg Pro Ala Ile Leu Ser Ile Thr  
1 5 10 15

Leu Ala Cys Leu Val Asn Gln Lys Thr His Tyr Pro Phe Glu Val Ile  
20 25 30

Val Thr Asp Asp Gly Ser Gln Glu Asp Leu Ser Pro Ile Ile Arg Gln  
35 40 45

Tyr Glu Asn Lys Leu Asp Ile Arg Tyr Val Arg Gln Lys Asp Asn Gly  
50 55 60

Phe Gln Ala Ser Ala Ala Arg Asn Met Gly Leu Arg Leu Ala Lys Tyr  
65 70 75 80

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Asp Phe Ile Gly Leu Leu Asp Cys Asp Met Ala Pro Asn Pro Leu Trp  
85 90 95

Val His Ser Tyr Val Ala Glu Leu Leu Glu Asp  
100 105

<210> 73  
<211> 105  
<212> PRT  
<213> Pasteurella multocida  
<400> 73

Ser Ile Tyr Ile Pro Ala Tyr Asn Cys Ala Asn Tyr Ile Gln Arg Cys  
1 5 10 15

Val Asp Ser Ala Leu Asn Gln Thr Thr Val Asp Leu Glu Val Cys Ile  
20 25 30

Cys Asn Asp Gly Ser Thr Asp Asn Thr Leu Glu Val Ile Asn Lys Leu  
35 40 45

Tyr Gly Asn Asn Pro Arg Val Arg Ile Met Ser Lys Pro Asn Gly Gly  
50 55 60

Ile Ala Ser Ala Ser Asn Ala Ala Val Ser Phe Ala Lys Gly Tyr Tyr  
65 70 75 80

Ile Gly Gln Leu Asp Ser Asp Asp Tyr Leu Glu Pro Asp Ala Val Glu  
85 90 95

Leu Cys Leu Lys Glu Phe Leu Lys Asp  
100 105

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<210> 74  
 <211> 771  
 <212> PRT  
 <213> *Pasteurella multocida*  
 <400> 74  
 Met Asn Thr Leu Ser Gln Ala Ile Lys Ala Tyr Asn Ser Asn Asp Tyr  
 1 5 10 15  
 Met Asn Thr Leu Ser Gln Ala Ile Lys Ala Tyr Asn Ser Asn Asp Tyr  
 1 5 10 15  
 Gln Leu Ala Leu Lys Leu Phe Glu Lys Ser Ala Glu Ile Tyr Gly Arg  
 20 25 30  
 Lys Ile Val Glu Phe Gln Ile Thr Lys Cys Lys Glu Lys Leu Ser Ala  
 35 40 45  
 His Pro Ser Val Asn Ser Ala His Leu Ser Val Asn Lys Glu Glu Lys  
 50 55 60  
 Val Asn Val Cys Asp Ser Pro Leu Asp Ile Ala Thr Gln Leu Leu Leu  
 65 70 75 80  
 Ser Asn Val Lys Lys Leu Val Leu Ser Asp Ser Gln Lys Asn Thr Leu  
 85 90 95  
 Lys Asn Lys Trp Lys Leu Leu Thr Glu Lys Lys Ser Glu Asn Ala Glu  
 100 105 110  
 Val Arg Ala Val Ala Leu Val Pro Lys Asp Phe Pro Lys Asp Leu Val  
 115 120 125  
 Leu Ala Pro Leu Pro Asp His Val Asn Asp Phe Thr Trp Tyr Lys Lys  
 130 135 140  
 Arg Lys Lys Arg Leu Gly Ile Lys Pro Glu His Gln His Val Gly Leu  
 145 150 155 160

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Ser Ile Ile Val Thr Thr Phe Asn Arg Pro Ala Ile Leu Ser Ile Thr  
165 170 175

Leu Ala Cys Leu Val Asn Gln Lys Thr His Tyr Pro Phe Glu Val Ile  
180 185 190

Val Thr Asp Asp Gly Ser Gln Glu Asp Leu Ser Pro Ile Ile Arg Gln  
195 200 205

Tyr Glu Asn Lys Leu Asp Ile Arg Tyr Val Arg Gln Lys Asp Asn Gly  
210 215 220

Phe Gln Ala Ser Ala Ala Arg Asn Met Gly Leu Arg Leu Ala Lys Tyr  
225 230 235 240

Asp Phe Ile Gly Leu Leu Asp Cys Asp Met Ala Pro Asn Pro Leu Trp  
245 250 255

Val His Ser Tyr Val Ala Glu Leu Leu Val Gln Lys Tyr Glu Gln Lys  
260 265 270

Leu Asp Ile Lys Tyr Val Arg Gln Lys Asp Tyr Gly Tyr Gln Leu Cys  
275 280 285

Ala Val Arg Asn Leu Gly Leu Arg Thr Ala Lys Tyr Asp Phe Val Ser  
290 295 300

Ile Leu Asp Cys Asp Met Ala Pro Gln Gln Leu Trp Val His Ser Tyr  
305 310 315 320

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Leu Thr Glu Leu Leu Glu Asp Asn Asp Ile Val Leu Ile Gly Pro Arg  
325 330 335

Lys Tyr Val Asp Thr His Asn Ile Thr Ala Glu Gln Phe Leu Asn Asp  
340 345 350

Pro Tyr Leu Ile Glu Ser Leu Pro Glu Thr Ala Thr Asn Asn Asn Pro  
355 360 365

Ser Ile Thr Ser Lys Gly Asn Ile Ser Leu Asp Trp Arg Leu Glu His  
370 375 380

Phe Lys Lys Thr Asp Asn Leu Arg Leu Cys Asp Ser Pro Phe Arg Tyr  
385 390 395 400

Phe Ser Cys Gly Asn Val Ala Phe Ser Lys Glu Trp Leu Asn Lys Val  
405 410 415

Gly Trp Phe Asp Glu Glu Phe Asn His Trp Gly Gly Glu Asp Val Glu  
420 425 430

Phe Gly Tyr Arg Leu Phe Ala Lys Gly Cys Phe Phe Arg Val Ile Asp  
435 440 445

Gly Gly Met Ala Tyr His Gln Glu Pro Pro Gly Lys Glu Asn Glu Thr  
450 455 460

Asp Arg Glu Ala Gly Lys Ser Ile Thr Leu Lys Ile Val Lys Glu Lys  
465 470 475 480

Val Pro Tyr Ile Tyr Arg Lys Leu Leu Pro Ile Glu Asp Ser His Ile  
485 490 495

His Arg Ile Pro Leu Val Ser Ile Tyr Ile Pro Ala Tyr Asn Cys Ala  
500 505 510

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Asn Tyr Ile Gln Arg Cys Val Asp Ser Ala Leu Asn Gln Thr Val Val  
515 520 525

Asp Leu Glu Val Cys Ile Cys Asn Asp Gly Ser Thr Asp Asn Thr Leu  
530 535 540

Glu Val Ile Asn Lys Leu Tyr Gly Asn Asn Pro Arg Val Arg Ile Met  
545 550 555 560

Ser Lys Pro Asn Gly Gly Ile Ala Ser Ala Ser Asn Ala Ala Val Ser  
565 570 575

Phe Ala Lys Gly Tyr Tyr Ile Gly Gln Leu Asp Ser Asp Asp Tyr Leu  
580 585 590

Glu Pro Asp Ala Val Glu Leu Cys Leu Lys Glu Phe Leu Lys Asp Lys  
595 600 605

Thr Leu Ala Cys Val Tyr Thr Thr Asn Arg Asn Val Asn Pro Asp Gly  
610 615 620

Ser Leu Ile Ala Asn Gly Tyr Asn Trp Pro Glu Phe Ser Arg Glu Lys  
625 630 635 640

Leu Thr Thr Ala Met Ile Ala His His Phe Arg Met Phe Thr Ile Arg  
645 650 655

Ala Trp His Leu Thr Asp Gly Phe Asn Glu Asn Ile Glu Asn Ala Val  
660 665 670

Asp Tyr Asp Met Phe Leu Lys Leu Ser Glu Val Gly Lys Phe Lys His  
675 680 685

Leu Asn Lys Ile Cys Tyr Asn Arg Val Leu His Gly Asp Asn Thr Ser  
690 695 700

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Ile Lys Lys Leu Gly Ile Gln Lys Lys Asn His Phe Val Val Val Asn  
705 710 715 720

Gln Ser Leu Asn Arg Gln Gly Ile Asn Tyr Tyr Asn Tyr Asp Lys Phe  
725 730 735

Asp Asp Leu Asp Glu Ser Arg Lys Tyr Ile Phe Asn Lys Thr Ala Glu  
740 745 750

Tyr Gln Glu Glu Met Asp Ile Leu Lys Asp Leu Lys Leu Ile Gln Asn  
755 760 765

Lys Asp Ala  
770

<210> 75  
<211> 696  
<212> PRT  
<213> Pasteurella multocida

<400> 75

Met Asn Thr Leu Ser Gln Ala Ile Lys Ala Tyr Asn Ser Asn Asp Tyr  
1 5 10 15

Glu Leu Ala Leu Lys Leu Phe Glu Lys Ser Ala Glu Thr Tyr Gly Arg  
20 25 30

Lys Ile Val Glu Phe Gln Ile Ile Lys Cys Lys Glu Lys Leu Ser Thr  
35 40 45

Asn Ser Tyr Val Ser Glu Asp Lys Lys Asn Ser Val Cys Asp Ser Ser  
50 55 60

Leu Asp Ile Ala Thr Gln Leu Leu Ser Asn Val Lys Lys Leu Thr  
65 70 75 80

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Leu Ser Glu Ser Glu Lys Asn Ser Leu Lys Asn Lys Trp Lys Ser Ile  
85 90 95

Thr Gly Lys Lys Ser Glu Asn Ala Glu Ile Arg Lys Val Glu Leu Val  
100 105 110

Pro Lys Asp Phe Pro Lys Asp Leu Val Leu Ala Pro Leu Pro Asp His  
115 120 125

Val Asn Asp Phe Thr Trp Tyr Lys Asn Arg Lys Lys Ser Leu Gly Ile  
130 135 140

Lys Pro Val Asn Lys Asn Ile Gly Leu Ser Ile Ile Ile Pro Thr Phe  
145 150 155 160

Asn Arg Ser Arg Ile Leu Asp Ile Thr Leu Ala Cys Leu Val Asn Gln  
165 170 175

Lys Thr Asn Tyr Pro Phe Glu Val Val Val Ala Asp Asp Gly Ser Lys  
180 185 190

Glu Asn Leu Leu Thr Ile Ile Arg Gln Tyr Glu Asn Lys Leu Asp Ile  
195 200 205

Arg Tyr Val Arg Gln Lys Asp Asn Gly Phe Gln Ala Ser Ala Ala Arg  
210 215 220

Asn Met Gly Leu Arg Leu Ala Lys Tyr Asp Phe Ile Gly Leu Leu Asp  
225 230 235 240

Cys Asp Met Ala Pro Asn Pro Leu Trp Val His Ser Tyr Val Ala Glu  
245 250 255

Leu Leu Glu Asp Asp Asp Leu Thr Ile Ile Gly Pro Arg Lys Tyr Ile  
260 265 270

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Asp Thr Gln His Ile Asp Pro Lys Asp Phe Leu Asn Asn Ala Ser Leu  
275 280 285

Leu Glu Ser Leu Pro Glu Val Lys Thr Asn Asn Ser Val Ala Ala Lys  
290 295 300

Gly Glu Gly Thr Val Ser Leu Asp Trp Arg Leu Glu Gln Phe Glu Lys  
305 310 315 320

Thr Glu Asn Leu Arg Leu Ser Asp Ser Pro Phe Arg Phe Phe Ala Ala  
325 330 335

Gly Asn Val Ala Phe Ala Lys Lys Trp Leu Asn Lys Ser Gly Phe Phe  
340 345 350

Asp Glu Glu Phe Asn His Trp Gly Glu Asp Val Glu Phe Gly Tyr  
355 360 365

Arg Leu Phe Arg Tyr Gly Ser Phe Phe Lys Thr Ile Asp Gly Ile Met  
370 375 380

Ala Tyr His Gln Glu Pro Pro Gly Lys Glu Asn Glu Thr Asp Arg Glu  
385 390 395 400

Ala Gly Lys Asn Ile Thr Leu Asp Ile Met Arg Glu Lys Val Pro Tyr  
405 410 415

Ile Tyr Arg Lys Leu Leu Pro Ile Glu Asp Ser His Ile Asn Arg Val  
420 425 430

Pro Leu Val Ser Ile Tyr Ile Pro Ala Tyr Asn Cys Ala Asn Tyr Ile  
435 440 445

Gln Arg Cys Val Asp Ser Ala Leu Asn Gln Thr Val Val Asp Leu Glu  
450 455 460

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Val Cys Ile Cys Asn Asp Gly Ser Thr Asp Asn Thr Leu Glu Val Ile  
465 470 475 480

Asn Lys Leu Tyr Gly Asn Asn Pro Arg Val Arg Ile Met Ser Lys Pro  
485 490 495

Asn Gly Gly Ile Ala Ser Ala Ser Asn Ala Ala Val Ser Phe Ala Lys  
500 505 510

Gly Tyr Tyr Ile Gly Gln Leu Asp Ser Asp Asp Tyr Leu Glu Pro Asp  
515 520 525

Ala Val Glu Leu Cys Leu Lys Glu Phe Leu Lys Asp Lys Thr Leu Ala  
530 535 540

Cys Val Tyr Thr Thr Asn Arg Asn Val Asn Pro Asp Gly Ser Leu Ile  
545 550 555 560

Ala Asn Gly Tyr Asn Trp Pro Glu Phe Ser Arg Glu Lys Leu Thr Thr  
565 570 575

Ala Met Ile Ala His His Phe Arg Met Phe Thr Ile Arg Ala Trp His  
580 585 590

Leu Thr Asp Gly Phe Asn Glu Lys Ile Glu Asn Ala Val Asp Tyr Asp  
595 600 605

Met Phe Leu Lys Leu Ser Glu Val Gly Lys Phe Lys His Leu Asn Lys  
610 615 620

Ile Cys Tyr Asn Arg Val Leu His Gly Asp Asn Thr Ser Ile Lys Lys  
625 630 635 640

Leu Gly Ile Gln Lys Lys Asn His Phe Val Val Val Asn Gln Ser Leu  
645 650 655

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Asn Arg Gln Gly Ile Thr Tyr Tyr Asn Tyr Asp Glu Phe Asp Asp Leu  
660 665 670

Asp Glu Ser Arg Lys Tyr Ile Phe Asn Lys Thr Ala Glu Tyr Gln Glu  
675 680 685

Glu Ile Asp Ile Leu Lys Asp Ile  
690 695

<210> 76  
<211> 711  
<212> PRT  
<213> *Pasteurella multocida*

<400> 76

Met Asn Thr Leu Ser Gln Ala Ile Lys Ala Tyr Asn Ser Asn Asp Tyr  
1 5 10 15

Gln Leu Ala Leu Lys Leu Phe Glu Lys Ser Ala Glu Ile Tyr Gly Arg  
20 25 30

Lys Ile Val Glu Phe Gln Ile Thr Lys Cys Lys Glu Lys Leu Ser Ala  
35 40 45

His Pro Ser Val Asn Ser Ala His Leu Ser Val Asn Lys Glu Glu Lys  
50 55 60

Val Asn Val Cys Asp Ser Pro Leu Asp Ile Ala Thr Gln Leu Leu Leu  
65 70 75 80

Ser Asn Val Lys Lys Leu Val Leu Ser Asp Ser Glu Lys Asn Thr Leu  
85 90 95

Lys Asn Lys Trp Lys Leu Leu Thr Glu Lys Lys Ser Glu Asn Ala Glu  
100 105 110

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Val Arg Ala Val Ala Leu Val Pro Lys Asp Phe Pro Lys Asp Leu Val  
115 120 125

Leu Ala Pro Leu Pro Asp His Val Asn Asp Phe Thr Trp Tyr Lys Lys  
130 135 140

Arg Lys Lys Arg Leu Gly Ile Lys Pro Glu His Gln His Val Gly Leu  
145 150 155 160

Ser Ile Ile Val Thr Thr Phe Asn Arg Pro Ala Ile Leu Ser Ile Thr  
165 170 175

Leu Ala Cys Leu Val Asn Gln Lys Thr His Tyr Pro Phe Glu Val Ile  
180 185 190

Val Thr Asp Asp Gly Ser Gln Glu Asp Leu Ser Pro Ile Ile Arg Gln  
195 200 205

Tyr Glu Asn Lys Leu Asp Ile Arg Tyr Val Arg Gln Lys Asp Tyr Gly  
210 215 220

Tyr Gln Leu Cys Ala Val Arg Asn Leu Gly Leu Arg Thr Ala Lys Tyr  
225 230 235 240

Asp Phe Val Ser Ile Leu Asp Cys Asp Met Ala Pro Gln Gln Leu Trp  
245 250 255

Val His Ser Tyr Leu Thr Glu Leu Leu Glu Asp Asn Asp Ile Val Leu  
260 265 270

Ile Gly Pro Arg Lys Tyr Val Asp Thr His Asn Ile Thr Ala Glu Gln  
275 280 285

Phe Leu Asn Asp Pro Tyr Leu Ile Glu Ser Leu Pro Glu Thr Ala Thr  
290 295 300

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2

Page 16 of 32

APPLICATION NO. : 10/642248

DATED : May 29, 2007

INVENTOR(S) : Paul DeAngelis and Wei Jing

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Asn Asn Asn Pro Ser Ile Thr Ser Lys Gly Asn Ile Ser Leu Asp Trp  
305 310 315 320

Arg Leu Glu His Phe Lys Lys Thr Asp Asn Leu Arg Leu Cys Asp Ser  
325 330 335

Pro Phe Arg Tyr Phe Ser Cys Gly Asn Val Ala Phe Ser Lys Glu Trp  
340 345 350

Leu Asn Lys Val Gly Trp Phe Asp Glu Glu Phe Asn His Trp Gly Gly  
355 360 365

Glu Asp Val Glu Phe Gly Tyr Arg Leu Phe Ala Lys Gly Cys Phe Phe  
370 375 380

Arg Val Ile Asp Gly Gly Met Ala Tyr His Gln Glu Pro Pro Gly Lys  
385 390 395 400

Glu Asn Glu Thr Asp Arg Glu Ala Gly Lys Ser Ile Thr Leu Lys Ile  
405 410 415

Val Lys Glu Lys Val Pro Tyr Ile Tyr Arg Lys Leu Leu Pro Ile Glu  
420 425 430

Asp Ser His Ile His Arg Ile Pro Leu Val Ser Ile Tyr Ile Pro Ala  
435 440 445

Tyr Asn Cys Ala Asn Tyr Ile Gln Arg Cys Val Asp Ser Ala Leu Asn  
450 455 460

Gln Thr Val Val Asp Leu Glu Val Cys Ile Cys Asn Asp Gly Ser Thr  
465 470 475 480

Asp Asn Thr Leu Glu Val Ile Asn Lys Leu Tyr Gly Asn Asn Pro Arg  
485 490 495

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2

Page 17 of 32

APPLICATION NO. : 10/642248

DATED : May 29, 2007

INVENTOR(S) : Paul DeAngelis and Wei Jing

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Val Arg Ile Met Ser Lys Pro Asn Gly Gly Ile Ala Ser Ala Ser Asn  
500 505 510

Ala Ala Val Ser Phe Ala Lys Gly Tyr Tyr Ile Gly Gln Leu Asp Ser  
515 520 525

Asp Asp Tyr Leu Glu Pro Asp Ala Val Glu Leu Cys Leu Lys Glu Phe  
530 535 540

Leu Lys Asp Lys Thr Leu Ala Cys Val Tyr Thr Thr Asn Arg Asn Val  
545 550 555 560

Asn Pro Asp Gly Ser Leu Ile Ala Asn Gly Tyr Asn Trp Pro Glu Phe  
565 570 575

Ser Arg Glu Lys Leu Thr Thr Ala Met Ile Ala His His Phe Arg Met  
580 585 590

Phe Thr Ile Arg Ala Trp His Leu Thr Asp Gly Phe Asn Glu Asn Ile  
595 600 605

Glu Asn Ala Val Asp Tyr Asp Met Phe Leu Lys Leu Ser Glu Val Gly  
610 615 620

Lys Phe Lys His Leu Asn Lys Ile Cys Tyr Asn Arg Val Leu His Gly  
625 630 635 640

Asp Asn Thr Ser Ile Lys Lys Leu Gly Ile Gln Lys Lys Asn His Phe  
645 650 655

Val Val Val Asn Gln Ser Leu Asn Arg Gln Gly Ile Asn Tyr Tyr Asn  
660 665 670

Tyr Asp Lys Phe Asp Asp Leu Asp Glu Ser Arg Lys Tyr Ile Phe Asn  
675 680 685

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2  
APPLICATION NO. : 10/642248  
DATED : May 29, 2007  
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 18 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Lys Thr Ala Glu Tyr Gln Glu Glu Met Asp Ile Leu Lys Asp Leu Lys  
690 695 700

Leu Ile Gln Asn Lys Asp Ala  
705 710

<210> 77  
<211> 696  
<212> PRT  
<213> *Pasteurella multocida*

<400> 77

Met Asn Thr Leu Ser Gln Ala Ile Lys Ala Tyr Asn Ser Asn Asp Tyr  
1 5 10 15

Glu Leu Ala Leu Lys Leu Phe Glu Lys Ser Ala Glu Thr Tyr Gly Arg  
20 25 30

Lys Ile Val Glu Phe Gln Ile Ile Lys Cys Lys Glu Lys Leu Ser Thr  
35 40 45

Asn Ser Tyr Val Ser Glu Asp Lys Lys Asn Ser Val Cys Asp Ser Ser  
50 55 60

Leu Asp Ile Ala Thr Gln Leu Leu Ser Asn Val Lys Lys Leu Thr  
65 70 75 80

Leu Ser Glu Ser Glu Lys Asn Ser Leu Lys Asn Lys Trp Lys Ser Ile  
85 90 95

Thr Gly Lys Ser Glu Asn Ala Glu Ile Arg Lys Val Glu Leu Val  
100 105 110

Pro Lys Asp Phe Pro Lys Asp Leu Val Leu Ala Pro Leu Pro Asp His  
115 120 125

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2

Page 19 of 32

APPLICATION NO. : 10/642248

DATED : May 29, 2007

INVENTOR(S) : Paul DeAngelis and Wei Jing

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Val Asn Asp Phe Thr Trp Tyr Lys Asn Arg Lys Lys Ser Leu Gly Ile  
130 135 140

Lys Pro Val Asn Lys Asn Ile Gly Leu Ser Ile Ile Ile Pro Thr Phe  
145 150 155 160

Asn Arg Ser Arg Ile Leu Asp Ile Thr Leu Ala Cys Leu Val Asn Gln  
165 170 175

Lys Thr Asn Tyr Pro Phe Glu Val Val Val Ala Asp Asp Gly Ser Lys  
180 185 190

Glu Asn Leu Leu Thr Ile Val Val Lys Tyr Glu Gln Lys Leu Asp Ile  
195 200 205

Lys Tyr Val Arg Gln Lys Asp Asn Gly Phe Gln Ala Ser Ala Ala Arg  
210 215 220

Asn Met Gly Leu Arg Leu Ala Lys Tyr Asp Phe Ile Gly Leu Leu Asp  
225 230 235 240

Cys Asp Met Ala Pro Asn Pro Leu Trp Val His Ser Tyr Val Ala Glu  
245 250 255

Leu Leu Glu Asp Asp Leu Thr Ile Ile Gly Pro Arg Lys Tyr Ile  
260 265 270

Asp Thr Gln His Ile Asp Pro Lys Asp Phe Leu Asn Asn Ala Ser Leu  
275 280 285

Leu Glu Ser Leu Pro Glu Val Lys Thr Asn Asn Ser Val Ala Ala Lys  
290 295 300

Gly Glu Gly Thr Val Ser Leu Asp Trp Arg Leu Glu Gln Phe Glu Lys  
305 310 315 320

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2

Page 20 of 32

APPLICATION NO. : 10/642248

DATED : May 29, 2007

INVENTOR(S) : Paul DeAngelis and Wei Jing

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Thr Glu Asn Leu Arg Leu Ser Asp Ser Pro Phe Arg Phe Phe Ala Ala  
325 330 335

Gly Asn Val Ala Phe Ala Lys Lys Trp Leu Asn Lys Ser Gly Phe Phe  
340 345 350

Asp Glu Glu Phe Asn His Trp Gly Gly Glu Asp Val Gly Phe Gly Tyr  
355 360 365

Arg Leu Phe Arg Tyr Gly Ser Phe Phe Lys Thr Ile Asp Gly Ile Met  
370 375 380

Ala Tyr His Gln Glu Pro Pro Gly Lys Glu Asn Glu Thr Asp Arg Glu  
385 390 395 400

Ala Gly Lys Asn Ile Thr Leu Asp Ile Met Arg Glu Lys Val Pro Tyr  
405 410 415

Ile Tyr Arg Lys Leu Leu Pro Ile Glu Asp Ser His Ile Asn Arg Val  
420 425 430

Pro Leu Val Ser Ile Tyr Ile Pro Ala Tyr Asn Cys Ala Asn Tyr Ile  
435 440 445

Gln Arg Cys Val Asp Ser Ala Leu Asn Gln Thr Val Val Asp Leu Glu  
450 455 460

Val Cys Ile Cys Asn Asp Gly Ser Thr Asp Asn Thr Leu Glu Val Ile  
465 470 475 480

Asn Lys Leu Tyr Gly Asn Asn Pro Arg Val Arg Ile Met Ser Lys Pro  
485 490 495

Asn Gly Gly Ile Ala Ser Ala Ser Asn Ala Ala Val Ser Phe Ala Lys  
500 505 510

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2

Page 21 of 32

APPLICATION NO. : 10/642248

DATED : May 29, 2007

INVENTOR(S) : Paul DeAngelis and Wei Jing

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Gly Tyr Tyr Ile Gly Gln Leu Asp Ser Asp Asp Tyr Leu Glu Pro Asp  
515 520 525

Ala Val Glu Leu Cys Leu Lys Glu Phe Leu Lys Asp Lys Thr Leu Ala  
530 535 540

Cys Val Tyr Thr Thr Asn Arg Asn Val Asn Pro Asp Gly Ser Leu Ile  
545 550 555 560

Ala Asn Gly Tyr Asn Trp Pro Glu Phe Ser Arg Glu Lys Leu Thr Thr  
565 570 575

Ala Met Ile Ala His His Phe Arg Met Phe Thr Ile Arg Ala Trp His  
580 585 590

Leu Thr Asp Gly Phe Asn Glu Ile Glu Asn Ala Val Asp Tyr Asp  
595 600 605

Met Phe Leu Lys Leu Ser Glu Val Gly Lys Phe Lys His Leu Asn Lys  
610 615 620

Ile Cys Tyr Asn Arg Val Leu His Gly Asp Asn Thr Ser Ile Lys Lys  
625 630 635 640

Leu Gly Ile Gln Lys Lys Asn His Phe Val Val Val Asn Gln Ser Leu  
645 650 655

Asn Arg Gln Gly Ile Thr Tyr Tyr Asn Tyr Asp Glu Phe Asp Asp Leu  
660 665 670

Asp Glu Ser Arg Lys Tyr Ile Phe Asn Lys Thr Ala Glu Tyr Gln Glu  
675 680 685

Glu Ile Asp Ile Leu Lys Asp Ile  
690 695

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2  
APPLICATION NO. : 10/642248  
DATED : May 29, 2007  
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 22 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 78  
<211> 40  
<212> PRT  
<213> *Pasteurella multocida*

<400> 78

Asn Lys Leu Asp Ile Arg Tyr Val Arg Gln Lys Asp Asn Gly Phe Gln  
1 5 10 15

Ala Ser Ala Ala Arg Asn Met Gly Leu Arg Leu Ala Lys Tyr Asp Phe  
20 25 30

Ile Gly Leu Leu Asp Cys Asp Met  
35 40

<210> 79  
<211> 40  
<212> PRT  
<213> *Pasteurella multocida*

<400> 79

Gln Lys Leu Asp Ile Lys Tyr Val Arg Gln Lys Asp Tyr Gly Tyr Gln  
1 5 10 15

Leu Cys Ala Val Arg Asn Leu Gly Leu Arg Thr Ala Lys Tyr Asp Phe  
20 25 30

Val Ser Ile Leu Asp Cys Asp Met  
35 40

<210> 80  
<211> 40  
<212> PRT  
<213> *Meleagris gallopavo*

<400> 80

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2

Page 23 of 32

APPLICATION NO. : 10/642248

DATED : May 29, 2007

INVENTOR(S) : Paul DeAngelis and Wei Jing

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Glu Lys Leu Asp Ile Lys Tyr Val Arg Gln Lys Asp Tyr Gly Tyr Gln  
1 5 10 15

Leu Cys Ala Val Arg Asn Leu Gly Leu Arg Thr Ala Lys Tyr Asp Phe  
20 25 30

Val Ser Ile Leu Asp Cys Asp Met  
35 40

<210> 81  
<211> 36  
<212> PRT  
<213> Goose

<400> 81

Val Asp Ile Lys Tyr Val Arg Gln Lys Asp Tyr Gly Tyr Gln Leu Cys  
1 5 10 15

Ala Val Arg Asn Leu Gly Leu Arg Thr Ala Lys Tyr Asp Phe Val Ser  
20 25 30

Ile Leu Asp Cys  
35

<210> 82  
<211> 33  
<212> PRT  
<213> sea lion

<400> 82

Lys Tyr Val Arg Gln Lys Asp Tyr Gly Tyr Gln Leu Cys Ala Val Arg  
1 5 10 15

Asn Leu Gly Leu Arg Thr Ala Lys Tyr Asp Phe Val Ser Ile Leu Asp  
20 25 30

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2  
APPLICATION NO. : 10/642248  
DATED : May 29, 2007  
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 24 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Cys

<210> 83  
<211> 35  
<212> PRT  
<213> Artificial sequence  
  
<220>  
<223> Consensus of SEQ ID NOS:78-82  
  
<220>  
<221> misc\_feature  
<222> (12)..(12)  
<223> Xaa can be any naturally occurring amino acid  
  
<220>  
<221> misc\_feature  
<222> (20)..(20)  
<223> Xaa can be any naturally occurring amino acid  
  
<220>  
<221> misc\_feature  
<222> (30)..(30)  
<223> Xaa can be any naturally occurring amino acid  
  
<400> 83  
  
Asp Ile Lys Tyr Val Arg Gln Lys Asp Tyr Gly xaa Gln Leu Cys Ala  
1 5 10 15

Val Arg Asn Xaa Gly Leu Arg Thr Ala Lys Tyr Asp Phe Xaa Ser Ile  
20 25 30

Leu Asp Cys  
35

<210> 84  
<211> 703  
<212> PRT  
<213> *Pasteurella multocida*

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2

Page 25 of 32

APPLICATION NO. : 10/642248

DATED : May 29, 2007

INVENTOR(S) : Paul DeAngelis and Wei Jing

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<400> 84

Met Asn Thr Leu Ser Gln Ala Ile Lys Ala Tyr Asn Ser Asn Asp Tyr  
1 5 10 15

Gln Leu Ala Leu Lys Leu Phe Glu Lys Ser Ala Glu Ile Tyr Gly Arg  
20 25 30

Lys Ile Val Glu Phe Gln Ile Thr Lys Cys Lys Glu Lys Leu Ser Ala  
35 40 45

His Pro Ser Val Asn Ser Ala His Leu Ser Val Asn Lys Glu Glu Lys  
50 55 60

Val Asn Val Cys Asp Ser Pro Leu Asp Ile Ala Thr Gln Leu Leu Leu  
65 70 75 80

Ser Asn Val Lys Lys Leu Val Leu Ser Asp Ser Glu Lys Asn Thr Leu  
85 90 95

Lys Asn Lys Trp Lys Leu Leu Thr Glu Lys Lys Ser Glu Asn Ala Glu  
100 105 110

Val Arg Ala Val Ala Leu Val Pro Lys Asp Phe Pro Lys Asp Leu Val  
115 120 125

Leu Ala Pro Leu Pro Asp His Val Asn Asp Phe Thr Trp Tyr Lys Lys  
130 135 140

Arg Lys Lys Arg Leu Gly Ile Lys Pro Glu His Gln His Val Gly Leu  
145 150 155 160

Ser Ile Ile Val Thr Thr Phe Asn Arg Pro Ala Ile Leu Ser Ile Thr  
165 170 175

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2

Page 26 of 32

APPLICATION NO. : 10/642248

DATED : May 29, 2007

INVENTOR(S) : Paul DeAngelis and Wei Jing

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Leu Ala Cys Leu Val Asn Gln Lys Thr His Tyr Pro Phe Glu Val Ile  
180 185 190

Val Thr Asp Asp Gly Ser Gln Glu Asp Leu Ser Pro Ile Ile Arg Gln  
195 200 205

Tyr Glu Asn Lys Leu Asp Ile Arg Tyr Val Arg Gln Lys Asp Tyr Gly  
210 215 220

Tyr Gln Leu Cys Ala Val Arg Asn Leu Gly Leu Arg Thr Ala Lys Tyr  
225 230 235 240

Asp Phe Val Ser Ile Leu Asp Cys Asp Met Ala Pro Gln Gln Leu Trp  
245 250 255

Val His Ser Tyr Leu Thr Glu Leu Leu Glu Asp Asp Asp Leu Thr Ile  
260 265 270

Ile Gly Pro Arg Lys Tyr Ile Asp Thr Gln His Ile Asp Pro Lys Asp  
275 280 285

Phe Leu Asn Asn Ala Ser Leu Leu Glu Ser Leu Pro Glu Val Lys Thr  
290 295 300

Asn Asn Ser Val Ala Ala Lys Gly Glu Gly Thr Val Ser Leu Asp Trp  
305 310 315 320

Arg Leu Glu Gln Phe Glu Lys Thr Glu Asn Leu Arg Leu Ser Asp Ser  
325 330 335

Pro Phe Arg Phe Phe Ala Ala Gly Asn Val Ala Phe Ala Lys Lys Trp  
340 345 350

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2

Page 27 of 32

APPLICATION NO. : 10/642248

DATED : May 29, 2007

INVENTOR(S) : Paul DeAngelis and Wei Jing

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Leu Asn Lys Ser Gly Phe Phe Asp Glu Glu Phe Asn His Trp Gly Gly  
355 360 365

Glu Asp Val Glu Phe Gly Tyr Arg Leu Phe Arg Tyr Gly Ser Phe Phe  
370 375 380

Lys Thr Ile Asp Gly Ile Met Ala Tyr His Gln Glu Pro Pro Gly Lys  
385 390 395 400

Glu Asn Glu Thr Asp Arg Glu Ala Gly Lys Asn Ile Thr Leu Asp Ile  
405 410 415

Met Arg Glu Lys Val Pro Tyr Ile Tyr Arg Lys Leu Leu Pro Ile Glu  
420 425 430

Asp Ser His Ile Asn Arg Val Pro Leu Val Ser Ile Tyr Ile Pro Ala  
435 440 445

Tyr Asn Cys Ala Asn Tyr Ile Gln Arg Cys Val Asp Ser Ala Leu Asn  
450 455 460

Gln Thr Val Val Asp Leu Glu Val Cys Ile Cys Asn Asp Gly Ser Thr  
465 470 475 480

Asp Asn Thr Leu Glu Val Ile Asn Lys Leu Tyr Gly Asn Asn Pro Arg  
485 490 495

Val Arg Ile Met Ser Lys Pro Asn Gly Gly Ile Ala Ser Ala Ser Asn  
500 505 510

Ala Ala Val Ser Phe Ala Lys Gly Tyr Tyr Ile Gly Gln Leu Asp Ser  
515 520 525

Asp Asp Tyr Leu Glu Pro Asp Ala Val Glu Leu Cys Leu Lys Glu Phe  
530 535 540

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2

Page 28 of 32

APPLICATION NO. : 10/642248

DATED : May 29, 2007

INVENTOR(S) : Paul DeAngelis and Wei Jing

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Leu Lys Asp Lys Thr Leu Ala Cys Val Tyr Thr Thr Asn Arg Asn Val  
545 550 555 560

Asn Pro Asp Gly Ser Leu Ile Ala Asn Gly Tyr Asn Trp Pro Glu Phe  
565 570 575

Ser Arg Glu Lys Leu Thr Thr Ala Met Ile Ala His His Phe Arg Met  
580 585 590

Phe Thr Ile Arg Ala Trp His Leu Thr Asp Gly Phe Asn Glu Lys Ile  
595 600 605

Glu Asn Ala Val Asp Tyr Asp Met Phe Leu Lys Leu Ser Glu Val Gly  
610 615 620

Lys Phe Lys His Leu Asn Lys Ile Cys Tyr Asn Arg Val Leu His Gly  
625 630 635 640

Asp Asn Thr Ser Ile Lys Lys Leu Gly Ile Gln Lys Lys Asn His Phe  
645 650 655

Val Val Val Asn Gln Ser Leu Asn Arg Gln Gly Ile Thr Tyr Tyr Asn  
660 665 670

Tyr Asp Glu Phe Asp Asp Leu Asp Glu Ser Arg Lys Tyr Ile Phe Asn  
675 680 685

Lys Thr Ala Glu Tyr Gln Glu Glu Ile Asp Ile Leu Lys Asp Ile  
690 695 700

<210> 85

<211> 705

<212> PRT

<213> *Pasteurella multocida*

<400> 85

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2

Page 29 of 32

APPLICATION NO. : 10/642248

DATED : May 29, 2007

INVENTOR(S) : Paul DeAngelis and Wei Jing

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Met Asn Thr Leu Ser Gln Ala Ile Lys Ala Tyr Asn Ser Asn Asp Tyr  
1 5 10 15

Glu Leu Ala Leu Lys Leu Phe Glu Lys Ser Ala Glu Thr Tyr Gly Arg  
20 25 30

Lys Ile Val Glu Phe Gln Ile Ile Lys Cys Lys Glu Lys Leu Ser Thr  
35 40 45

Asn Ser Tyr Val Ser Glu Asp Lys Lys Asn Ser Val Cys Asp Ser Ser  
50 55 60

Leu Asp Ile Ala Thr Gln Leu Leu Ser Asn Val Lys Lys Leu Thr  
65 70 75 80

Leu Ser Glu Ser Glu Lys Asn Ser Leu Lys Asn Lys Trp Lys Ser Ile  
85 90 95

Thr Gly Lys Ser Glu Asn Ala Glu Ile Arg Lys Val Glu Leu Val  
100 105 110

Pro Lys Asp Phe Pro Lys Asp Leu Val Leu Ala Pro Leu Pro Asp His  
115 120 125

Val Asn Asp Phe Thr Trp Tyr Lys Asn Arg Lys Lys Ser Leu Gly Ile  
130 135 140

Lys Pro Val Asn Lys Asn Ile Gly Leu Ser Ile Ile Ile Pro Thr Phe  
145 150 155 160

Asn Arg Ser Arg Ile Leu Asp Ile Thr Leu Ala Cys Leu Val Asn Gln  
165 170 175

Lys Thr Asn Tyr Pro Phe Glu Val Val Val Ala Asp Asp Gly Ser Lys  
180 185 190

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2

Page 30 of 32

APPLICATION NO. : 10/642248

DATED : May 29, 2007

INVENTOR(S) : Paul DeAngelis and Wei Jing

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Glu Asn Leu Leu Thr Ile Val Gln Lys Tyr Glu Gln Lys Leu Asp Ile  
195 200 205

Lys Tyr Val Arg Gln Lys Asp Asn Gly Phe Gln Ala Ser Ala Ala Arg  
210 215 220

Asn Met Gly Leu Arg Leu Ala Lys Tyr Asp Phe Ile Gly Leu Leu Asp  
225 230 235 240

Cys Asp Met Ala Pro Asn Pro Leu Trp Val His Ser Tyr Val Ala Glu  
245 250 255

Leu Leu Leu Glu Asp Asn Asp Ile Val Leu Ile Gly Pro Arg Lys Tyr  
260 265 270

Val Asp Thr His Asn Ile Thr Ala Glu Gln Phe Leu Asn Asp Pro Tyr  
275 280 285

Leu Ile Glu Ser Leu Pro Glu Thr Ala Thr Asn Asn Asn Pro Ser Ile  
290 295 300

Thr Ser Lys Gly Asn Ile Ser Leu Asp Trp Arg Leu Glu His Phe Lys  
305 310 315 320

Lys Thr Asp Asn Leu Arg Leu Cys Asp Ser Pro Phe Arg Tyr Phe Ser  
325 330 335

Cys Gly Asn Val Ala Phe Ser Lys Glu Trp Leu Asn Lys Val Gly Trp  
340 345 350

Phe Asp Glu Glu Phe Asn His Trp Gly Gly Glu Asp Val Glu Phe Gly  
355 360 365

Tyr Arg Leu Phe Ala Lys Gly Cys Phe Phe Arg Val Ile Asp Gly Gly  
370 375 380

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2

Page 31 of 32

APPLICATION NO. : 10/642248

DATED : May 29, 2007

INVENTOR(S) : Paul DeAngelis and Wei Jing

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Met Ala Tyr His Gln Glu Pro Pro Gly Lys Glu Asn Glu Thr Asp Arg  
385 390 395 400

Glu Ala Gly Lys Ser Ile Thr Leu Lys Ile Val Lys Glu Lys Val Pro  
405 410 415 420

Tyr Ile Tyr Arg Lys Leu Leu Pro Ile Glu Asp Ser His Ile His Arg  
420 425 430

Ile Pro Leu Val Ser Ile Tyr Ile Pro Ala Tyr Asn Cys Ala Asn Tyr  
435 440 445

Ile Gln Arg Cys Val Asp Ser Ala Leu Asn Gln Thr Val Val Asp Leu  
450 455 460

Glu Val Cys Ile Cys Asn Asp Gly Ser Thr Asp Asn Thr Leu Glu Val  
465 470 475 480

Ile Asn Lys Leu Tyr Gly Asn Asn Pro Arg Val Arg Ile Met Ser Lys  
485 490 495

Pro Asn Gly Gly Ile Ala Ser Ala Ser Asn Ala Ala Val Ser Phe Ala  
500 505 510

Lys Gly Tyr Tyr Ile Gly Gln Leu Asp Ser Asp Asp Tyr Leu Glu Pro  
515 520 525

Asp Ala Val Glu Leu Cys Leu Lys Glu Phe Leu Lys Asp Lys Thr Leu  
530 535 540

Ala Cys Val Tyr Thr Thr Asn Arg Asn Val Asn Pro Asp Gly Ser Leu  
545 550 555 560

Ile Ala Asn Gly Tyr Asn Trp Pro Glu Phe Ser Arg Glu Lys Leu Thr  
565 570 575

UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2

Page 32 of 32

APPLICATION NO. : 10/642248

DATED : May 29, 2007

INVENTOR(S) : Paul DeAngelis and Wei Jing

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Thr Ala Met Ile Ala His His Phe Arg Met Phe Thr Ile Arg Ala Trp  
580 585 590

His Leu Thr Asp Gly Phe Asn Glu Asn Ile Glu Asn Ala Val Asp Tyr  
595 600 605

Asp Met Phe Leu Lys Leu Ser Glu Val Gly Lys Phe Lys His Leu Asn  
610 615 620

Lys Ile Cys Tyr Asn Arg Val Leu His Gly Asp Asn Thr Ser Ile Lys  
625 630 635 640

Lys Leu Gly Ile Gln Lys Lys Asn His Phe Val Val Val Asn Gln Ser  
645 650 655

Leu Asn Arg Gln Gly Ile Asn Tyr Tyr Asn Tyr Asp Lys Phe Asp Asp  
660 665 670

Leu Asp Glu Ser Arg Lys Tyr Ile Phe Asn Lys Thr Ala Glu Tyr Gln  
675 680 685

Glu Glu Met Asp Ile Leu Lys Asp Leu Lys Leu Ile Gln Asn Lys Asp  
690 695 700

Ala  
705

--.

Signed and Sealed this  
Sixteenth Day of June, 2009

*John Doll*

JOHN DOLL  
Acting Director of the United States Patent and Trademark Office